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SUMMARY: This instruction provides a template for an operational development evaluation as required by Policy Directive 80-8 *Development for Improving Operations and Services*. Operational development evaluation will support a deployment readiness decision for implemented operational requirements. It summarizes verification and validation (V&V) analyses and uses test and evaluation (T&E) reports to assess developed products and processes to determine whether they are ready for deployment. The template can be used for reports and briefings.

Signed by_____October 14, 2004
John L. Hayes   Date
Director, Office of Science
and Technology

Operational Development Evaluation

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Operational Development Evaluation

1.   Introduction. The operational development evaluation is a document or briefing required for a deployment readiness review. The operational development evaluation reports verification and validation information developed during user needs/scientific ideas, validation, research and analysis, and operational development stages of the Operational Services Improvement process. The operational development evaluation certifies that system products and processes satisfy the statement of need and project objectives. This instruction provides a template for operational development evaluation.

Figure 1 illustrates how V&V and T&E support the Operations and Services Improvement Process (OSIP) and provide inputs to the operational development evaluation.

2.   Purpose and Scope. This instruction specifies a template for operational development evaluation.

3.   Program Product Standards. This section defines the template for operational development evaluation. The template supports both documented reports and briefings. Operational development evaluation is required for Gate 4 of the Operations and Services Improvement Process.

3.1   Introduction. Provide an introduction for the operational development evaluation. Provide system context and address system objectives, requirements, and key system concepts.

3.2   System Overview. Provide a description of the developed system and relate the system to its objectives.

3.3   Summary of the V&V Program. Provide a summary of V&V activities that address key areas like those identified in IEEE 1012-1998, e.g. management and planning, acquisition, supply, and development. Provide an overview of the V&V approach, identify critical system elements and possible impacts due to failure, and show how the V&V program addressed the critical system elements. An example of a software V&V overview is provided in *IEEE 1012-1998*[1]. An example of an Independent Validation & Verification (IV&V) objective is provided in Appendix B.

3.4   Critical Anomalies. Address critical anomalies discovered during operational development that were not repaired prior to deployment. Identify planned workarounds and potential impacts.

3.5   System Qualification Summary. Provide analyses to certify the system if it is ready for deployment. In the event the analyses show that the system is not ready for deployment, this section will address remedial action required to prepare the system for deployment.

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[1]*IEEE Std 1012-1998 - IEEE Standard for Software Verification and Validation*, page 8.

3.6   <u>Recommendation</u>. Provide recommendations regarding deployment. Identify updates to the operational development project plan to complete required remedial actions.

3.7   <u>Appendices</u>. Include technical analyses associated with operational development evaluation. Provide key decisions and rationale. Include views of priorities, relative weighting, or other decision support information used in the analyses.

4.   This instruction is supported by the Glossary in Appendix A, the links to the OSIP in Appendix B, and the references in Appendix C.

Appendix A – Glossary

Evaluation	To review, analyze, and assess data obtained from testing and other means to aid in making systematic decisions (US DoD, Systems Engineering Fundamentals, 2001).
System	An integrated set of elements to accomplish a defined objective. These include hardware, software, firmware, people, information, techniques, facilities, services, and other support elements (INCOSE, Systems Engineering Handbook, 2000).
Test & Evaluation	Test and Evaluation (T&E) policies and procedures directly support the system engineering process of Verification (US DoD, Systems Engineering Fundamentals, 2001).
Testing	The means by which objective judgments are made regarding the extent to which the system meets, exceeds, or fails to meet stated objectives (US DoD, Systems Engineering Fundamentals, 2001).
Validation	Confirmation by examination and provisions of objective evidence that the particular requirements for a specific intended use are fulfilled (IEEE 1012-1998).
Verification	Confirmation by examination of provisions of objective evidence and analysis that specified requirements have been fulfilled (IEEE 1012-1998).

**Appendix B – Operational Development Evaluation
Links to the Operations and Services Improvement Process**

Verfication & Validation

Operational Development Evaluation

Deployment Readiness (G4)

G1 G2 G3 G4

User Needs / Scientific Ideas

Validation

Research & Analysis

Operational Development

Deployment, Maintenance, & Assessment

Test & Evaluation

Early Op. Assessment DT&E OT&E

- Operational aspects
- Preferred alternatives
- Potential effectiveness
- Suitability
- Independent evaluation

- Operational utility
- Component T&E
- System / Subsystem T&E
- Interoperability
- Independant assessment

- Operational utility
- Product validation
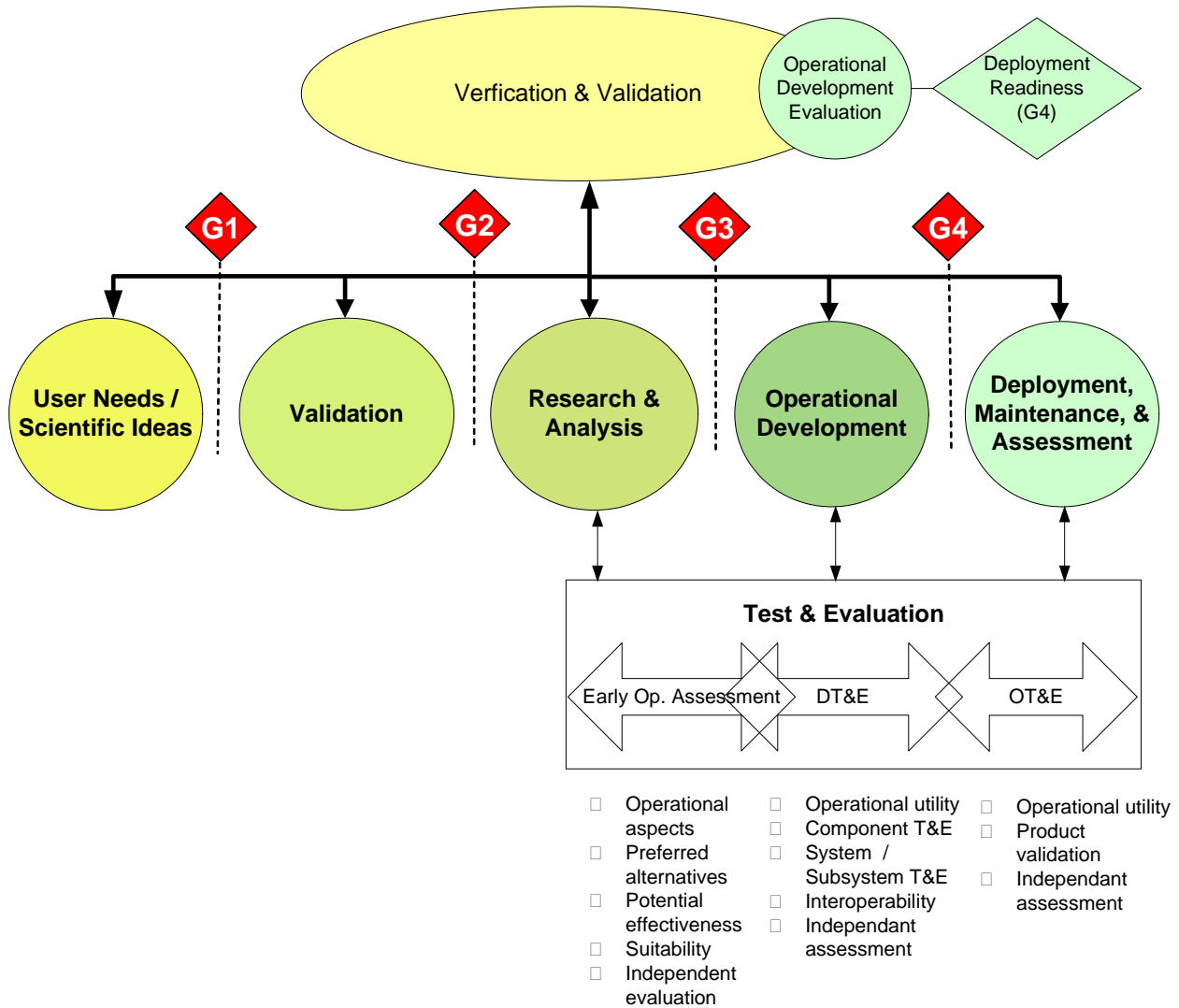- Independant assessment

Figure 1.   Operational Development Evaluation Links to the Operations and Services Improvement Process

Appendix B – Independent Validation & Verification (IV&V) Objectives Example

IV&V OBJECTIVES

- ORDA
  - Enhance quality of contract deliverables
  - Independent Group to evaluate:
    - Are we building the System right (Verification)
    - Are we building the right System (Validation)
- Need Technical Experts and Customer Advocates
- Propose ROC Led Effort
  - Draft Proposal submitted to ROC
  - ROC Management supports
  - Revision in progress

- ROC
  - Ensure that requirements are clearly understood
  - Product meets requirements
  - Opportunity to provide consolidated ROC clarification to requirements
  - High quality ORDA documentation
  - Supportable, maintainable, and reliable system fielded
  - Large portion of the documentation completed before formal testing and deployment
  - Ensure O&M point of view is represented in all aspects

IV&V Kickoff

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Appendix C - References

1. NWS Policy Directive 10-1, *Operations and Services Improvement Process* (in process).
2. NWS Policy Directive 80-8, *Development for Improving Operations and Services.*
3. US DoD, *Systems Engineering Fundamentals*, 2001